

REMARKS

The non-final Office Action of December 11, 2003, has been received and carefully reviewed. Accordingly, claims 1-9 have been canceled and replaced by new claims 10-20 directed to a method and apparatus for separating-out items for batching into weight determined groups; therefore, claims 10-20 are pending of which claims 10 and 16 are independent. In view of the above amendments and the following remarks, further consideration of this application is now requested.

With regard to the Examiner's formality objections to the specification and claims and the formality rejection, under 35 U.S.C. § 112 (second paragraph), of claims 1-9, the above amendments to the specification and new claim 10-20 have been made to remedy each issue raised in the objections and the § 112 rejection. Accordingly, withdrawal of the objections to the specification and claims, as well as the § 112 rejection, is requested.

Concerning the formality rejection, under § 112 (first paragraph), regarding an alleged lack of enablement of the specification to teach one of ordinary skill in the prior art how to make and use the claimed embodiment of integrating a weighing cell into the gripping means for the robot, the Applicant notes that a careful review of the specification reveals that such teachings are clearly set forth. Specifically, the specification at page 1, line 32, states:

However, it is an important aspect of the invention that the robot arm...can be arranged not only to grip the items, but also to determine the weight of the supplied item...during initial lifting of the item...This can be effected in a direct manner by mounting the gripping tool on the robot arm in connection with a weighing cell...so that the weight determination and allocation of the item can be carried out when the item is lifted...

Further, the original specification at page 9, line 8, provides the discussion of this embodiment as follows:

To this can be added the mentioned possibility of replacing or supplementing the fixed weighing device with a weighing arrangement integrated with the robot's gripping system...

Additionally, the above amendment to the drawings and specification provides a generic "black box" illustration of the weighing cell "25" integrated into the gripping element "24" of Figure 1, as is required by 37 C.F.R. 1.83(a). It is asserted, that in view of the teachings of the original specification one of ordinary skill in the prior art would be able to make and use a gripping system of the claimed invention having an integrated weighing cell in a predictable manner and without under experimentation. Accordingly, withdrawal of the § 112 (first paragraph) rejection is respectfully requested.

With regard to the Examiner's prior art rejections of:

Claims 1 , 2, 4, 6, 8 and 9, under 35 U.S.C. § 102(b), as being anticipated by the teachings of the Van Durrett et al. ('571) patent, and

Claims 1, 2, 6, 8 and 9, under 35 U.S.C. § 102(b), as being anticipated by the teachings of the Huang et al. ('283) patent,

the Applicant respectfully traverses each of these rejections. Initially, it is noted that original claim 5, now claim 15, has not been the subject of any prior art rejection and is therefore believed to be allowable over the prior art of record. However, the Applicant has not placed that feature into independent format (with the limitations of the base claim and any intervening claim) at this time since the Applicant is of the opinion that currently pending claims 10-14 and 16-20 are also patentable for the reasons set forth below.

The invention as presently claimed is directed to a method and apparatus for sorting items for eventual weight determined grouping by

- performing a weight-determination of each item;
- batching the items at a batch location in accordance with their weight and the weight of the items already placed at the batch location, or batching the items at the batch location as a combination of items available for the selection; and
- transporting the items to respective receiving positions based upon weight-determined groups to achieve a predefined total weight at each receiving position.

wherein the transporting is performed by transport equipment which includes an associated control unit,

wherein the control unit arranges the allocation of the individual items to respective receiving positions of items from the different items at the batch location, and performs the selective control of the transport equipment, and

wherein the transport equipment includes at least two robots, each of which has a gripping element for the selective gripping of an item and direct transport of item from a batch location to a selected receiving position. (Emphasis added)

The Applicant submits that the above highlighted claimed combination of features is not taught or suggested by the combination of teachings of Van Durret et al. ('571) or Huang et al. ('283). Specifically, Van Durrett et al disclose an automated palletizing system wherein a robot is utilized for transferring objects (97) to a pallet (100). A queuing system (50) arranged upstream of the robot arm (90) serves to feed the objects to the robot in a calculated loading order. That is, while the object may be queued into a holding slot of the queuing system (50), an object (97) when it is to be palletized is fed to a pickup point (80) by the conveying system. As such, the robot arm does not go to the queuing areas to pick up the object for direct transfer to a pallet as presently claimed. Thus, the robot of the Van Durrett et al. system picks up the objects (97) delivered to it and places the object (97) on a pallet (100), unless the object is too heavy or is damaged (in which cases the object may be loaded onto an alternative pallet (99) or to a reject station (98) (see column 4, lines 59-64). Therefore, the robot of the Van Durrett et al system is not able to perform a selective gripping and direct transferring of objects, and neither is the system related to the batching of objects in weight-determined groups to achieve a final predetermined total weight.

In a similar manner, Huang et al. relate to a method and apparatus for palletizing rectangular packages/boxes, in which a measuring station (14), of Figure 1, measures the size and weight of the incoming packages P. The robot (17), (19) picks up packages one at a time from an accumulator conveyor and places them on a pallet (11), shown in Figures 1-2. according to a number of criteria, e.g., in relation to size and weight. The packages are selected and placed in order to achieve what is

referred to as the “best “ package for placement on a pallet (see column 8, lines 29-43). The criteria which are used for selecting a package to palletize are exemplified by stability, performance (efficient use of space), etc. (see column 13, lines 29-40). Further, the method and apparatus for achieving this selecting and palletizing employs an accumulator (16), like Van Durrett et al., in which the accumulator includes a pre-buffer section (16A) and a buffer section (16B) for packages (see column 10, lines 66-67; column 11, lines 1-10, 45-67; column 12, lines 13-16). However, the gripper (17) can only remove packages from the buffer (16B) section, i.e., like Van Durrett et al., the robot of the Huang et al system is not able to perform a selective gripping and direct transferring of objects, and neither is the system related to the batching of objects in weight-determined groups to achieve a final predetermined total weight

Thus, it must be understood that the Huang et al. system does not select and place the packages in order to achieve a weight-determined group of packages, i.e., the Huang et al. system is not intended to come as close as possible to a predetermined total weight. Specifically, the measured weight of the respective packages are used by the patentees for determining the total weight (see column 15, lines 11-16) for informational purposes, for deciding the amount of necessary support (see column 21, lines 22-25), for computation of the centre of gravity (column 21, line 41), for computation of the stability in general (see column 23, line 30, to column 24, line 9; column 35, lines 22-35). No mention whatsoever is made in Huang et al. regarding the selection of the packages to achieve a predetermined total weight as presently claimed. Thus, even though the robot picks the packages selectively, the packages are not placed selectively in order to achieve a batching in weight-determined groups, e.g., in order to achieve a predefined total weight.


Since the teachings of Van Durrett et al. ('571) or Huang et al. ('283) fail to teach all of the features of the present invention and fail to suggest to one of ordinary skill in the art anything that would lead to a modification of the teachings of Van Durrett et al. ('571) or Huang et al. ('283) that would result in the claimed invention,

the rejections, under § 102(b) or § 103(a), of claims 1-9 have been set forth in error and must now be withdrawn.

While the present application is now believed to be in condition for allowance, should the Examiner find some issue to remain unresolved, or should any new issues arise, which could be eliminated through discussions with Applicant's representative, then the Examiner is invited to contact the undersigned by telephone in order that the further prosecution of this application can thereby be expedited.

Lastly, it is noted that a separate Extension of Time Petition (three months) accompanies this response along with an authorization to charge the requisite extension of time fee to Deposit Account No. 19-2380 (742113-10). However, should that petition become separated from this Amendment, then this Amendment should be construed as containing such a petition. Likewise, any overage or shortage in the required payment should be applied to Deposit Account No. 19-2380 (742113-10).

Respectfully submitted,

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